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RMRS Generic Health and Safety Plan for Characterization Sampling

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APPROVAL SIGNATURES

This Generic Health and Safety Plan for Characterization Sampling is approved:

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Table of Contents

1.0 INTRODUCTION 1

2.0 SAFE WORK PRACTICES 1
- 2.1 Electrical hazards 2
- 2.2 Concrete sampling 2
- 2.3 Falls 3
- 2.4 Ladders 3
- 2.5 Confined Spaces 3
- 2.6 Radiological and chemical hazards 3
- 2.7 Heat and cold stress 3
- 2.8 Noise 3
- 2.9 Hazards presented by other operations 4

3.0 ASBESTOS 4

4.0 LEAD 5

5.0 BERYLLIUM 6

6.0 TRAINING 7

7.0 PERSONAL PROTECTIVE EQUIPMENT 7

8.0 EMERGENCIES 8

9.0 ACTIVITY HAZARD ANALYSIS 9

10.0 REVIEW AND UPDATE 9

11.0 REFERENCES 10

1.0 INTRODUCTION

This program defines the health and safety requirements for characterization sampling activities. It was designed to ensure that consistent health and safety practices are followed during sampling.

In addition to the requirements specified in this document, a minimum of a job-specific Activity Hazard Analysis (AHA) is required for each project/sampling event. Additional documents (i.e. Lead Compliance Plan or an addendum to this program) may also be required depending on planned sampling activities. Contact the Characterization Health and Safety Supervisor for assistance.

Characterization sampling may be conducted for waste disposal and worker health and safety purposes. Sampling conducted for worker health and safety purposes is driven by the need to determine the presence, quantity and location of hazardous substances in building materials which may create a health hazard to employees involved in demolition or renovation. The Characterization Health and Safety Supervisor will specify health and safety related sample points, collection methods and analysis for each project/sampling event in accordance with the requirements listed in the compound-specific sections of this document.

2.0 SAFE WORK PRACTICES

Sampling will be conducted in a manner which:

- minimizes potential exposure to the sampler,
- eliminates potential exposure to collocated workers,
- minimizes potential for generation of airborne material, and
- ensures no contamination of the work area.

No eating, drinking, smoking, chewing, or applying cosmetics is allowed in the sampling area.

Whenever possible, sampling methods which encase or contain the suspect material will be used. Examples include core samplers used to collect asbestos samples and plastic bags taped to the wall underneath paint chip scraping areas.

Wet sampling methods will be used when feasible to minimize generation of airborne material. This includes surfactant used during asbestos sampling and water mist used during paint chip sampling.

All materials resulting from sampling will be removed. If potential asbestos debris or paint chips fall on the floor during sampling, they will be cleaned with wet methods or a HEPA vacuum. Absolutely no contamination of the work area will be left after sampling activities.

Collocated workers and supervisors must be notified about sampling activities and must be kept out of the sampling area. Any potential exposure to collocated workers is unacceptable. Each sampling area will either be guarded by an individual assigned to inform collocated workers about the sampling or marked by caution tape or other means to alert personnel to remain out of the area. If caution tape or other means is used, signs reading "DO NOT ENTER/ CHARACTERIZATION SAMPLING IN PROGRESS/ CONTACT BUILDING MANAGER" will be posted at all entrances to the sampling area.

Many other hazards may be present during characterization sampling. The work area must be evaluated prior to sampling to identify these hazards, and they must be addressed in the AHA. These may include the following:

2.1 Electrical hazards

Characterization sampling often involves drilling into floors, walls or ceilings. RMRS Operations Directive #006 will be followed to minimize potential of accidental contact with energized electrical utilities during all work involving penetration greater than 2 inches of concrete or masonry pads, floors, walls, ceilings, or asphalt pads.

Lockout/Tagout (LO/TO) is required when potential contact with an electrical power circuit exists. The LOTO Program in the RFETS Health and Safety Practices Manual will be followed. LOTO training is required biennially.

2.2 Concrete sampling

In addition to inherent electrical hazards, concrete contains silica. If sampling methods generate airborne particles, such as drilling, precautions must be taken. Wet methods will be used. In addition, the following Personal Protective Equipment (PPE) is required:

- a full-face respirator equipped with HEPA cartridges, and
- Tyvek coveralls.

Personal air monitoring for silica will be conducted by the Characterization Health and Safety Supervisor in accordance with NIOSH Method #7500 (See references). If sampling results indicate airborne silica levels less than 25 micrograms of silica per

cubic meter of air ($\mu g/m^3$), the PPE may be downgraded during future similar sampling events.

Concrete patch, float, or seal material may contain asbestos. If the material is not known to be asbestos free, it must either be assumed to contain asbestos or must be sampled prior to future disturbance.

2.3 Falls

If sampling personnel must work on unprotected elevated surfaces higher than 6 feet, fall protection is required. Fall Protection Awareness Training is required biennially for employees and their supervisors who work in areas that could result in a fall of 6 feet or more.

2.4 Ladders

Ladders must often be used during sampling activities. Ladder users and their supervisors must have Ladder Safety Awareness Training biennially.

2.5 Confined Spaces

Confined spaces may need to be entered for sampling purposes. All personnel involved in the entry must have Confined Space Entry Safety Awareness Training annually. A permit is required for all confined space entries.

2.6 Radiological and chemical hazards

A thorough pre-job walk-through involving the Radiological Engineer and Characterization Health and Safety Supervisor must be conducted to identify these hazards. An RWP and/or ALARA Job Review may be required based on potential radiological hazards present. The RWP will specify required radiological controls, PPE, hold points, etc. The ALARA Job Review will specify additional radiological controls.

2.7 Heat and cold stress

Guidelines established in the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) for Heat and Cold Stress will be followed. The Characterization Health and Safety Supervisor will communicate with Medical to ensure that employees involved are medically approved to work in hot or cold environments.

2.8 Noise

The RFETS Health and Safety Practices Manual Hearing Conservation chapter will be followed. All areas with noise levels greater than 85 decibels on the A-weighted scale (dBA) will require posting and the use of hearing protection. The

Characterization Health and Safety Supervisor or designee will measure noise levels and post the area if required.

2.9 Hazards presented by other operations

It is very important to communicate with the building manager regarding other activities in the area. When possible, sampling will be conducted when no other personnel are present. The AHA will address any additional hazards presented by other operations.

3.0 ASBESTOS

All suspect asbestos containing materials potentially involved in the demolition or renovation will be sampled. Asbestos sampling will be conducted in accordance with EPA 40 CFR 763.86, and with applicable sections of Colorado Regulation 8 (CCR 8).

The sample collector must hold a current Colorado State Asbestos Inspector Certification. RCTs or other personnel who may contact but not disturb asbestos must have Asbestos Awareness Training annually. Other sampling personnel must have the one time Asbestos Briefing. All personnel wearing respiratory protection must have current annual Respirator Indoctrination Training and fit test.

Personal Protective Equipment (PPE) required for asbestos sampling includes the following:

- a full-face respirator equipped with HEPA cartridges
- Tyvek coveralls
- leather outer gloves (if cut or pinch hazards exist) (to be disposed of as asbestos waste)
- inner surgeons gloves, and
- disposable shoe covers

A current RFETS medical approval to wear a respirator is also required.

The above listed PPE (with the exception of gloves)is NOT required when air monitoring data is provided with the AHA which shows that a similar asbestos sampling activity was monitored in the past twelve months and resulted in airborne asbestos levels less than 0.1 fibers per cubic centimeter of air (Fibers/cc). Gloves are always required.

Personal breathing zone sampling for asbestos may be conducted periodically to

assess exposures in accordance with 29 CFR 1926.1101. The Characterization Health and Safety Supervisor or designee will determine when sampling is required and will conduct the sampling.

4.0 LEAD

Demolition of structures coated with lead paint may result in employee exposures to lead, depending on the demolition methods used. Therefore, paint may be sampled to determine the content of lead or other metals, or it can be assumed to contain lead. Paint can be sampled by scraping and collecting paint chips or nondestructively by X-ray diffraction. Scrape sampling allows a much lower detection limit [10 parts per million (ppm)] as inductively coupled plasma (ICP) analysis (total metals) is performed in a laboratory. X-ray diffraction has a higher detection limit of 600 ppm lead in paint. However, it is fast (1 minute), accurate, and does not potentially create airborne dusts. X-ray diffraction analysis is suitable for demolition and renovation methods unlikely to result in lead overexposure to personnel above the action level of 30 micrograms of lead per cubic meter of air ($\mu g/m^3$).

Activities for which X-ray diffraction analysis is approved include:

- Cold cutting (shearing or pipe cutting) of material coated with non-oxidized lead based paint, and
- nondestructive disassembly.

For remote demolition methods (heavy equipment), no paint sampling is required. Personal air sampling during previous projects has repeatedly shown that no lead levels were detected during demolition of buildings having lead paint, while using heavy equipment.

Prior to sampling, all employees who sample paint by scraping will receive Lead Awareness Training. This training is required annually. In addition, operators of the Niton X-ray diffraction unit must attend the Niton eight-hour training class prior to sampling.

PPE required for scrape sampling includes the following:

- a full-face respirator equipped with HEPA cartridges
- Tyvek coveralls
- leather outer gloves (to be disposed of or used only for paint scraping)
- inner surgeons gloves, and
- disposable shoe covers

All personnel wearing respiratory protection must have current annual RFETS Respirator Indoctrination Training and fit test.

The above listed PPE (with the exception of gloves)is NOT required when air monitoring data is provided with the AHA which shows that a similar paint scraping activity was monitored in the past twelve months and resulted in airborne lead levels less than the action level. Gloves are always required.

Personal breathing zone sampling for airborne lead is required unless previous representative sampling has been conducted within the past twelve months. The Characterization Health and Safety Supervisor or designee will conduct the monitoring.

Medical surveillance for lead is not required as sampling activities are not expected to result in airborne lead levels above the action level. However, if monitoring results show that this level has been exceeded, all affected personnel will receive lead medical surveillance. If personnel are wearing respiratory protection, medical approval is required.

Sampling locations will be determined based upon planned demolition or renovation activities. The Characterization Health and Safety Supervisor or designee will determine sample location and number of samples. If a full characterization is requested, all paint colors, textures, and ages must be sampled. Care will be taken to sample all layers of paint.

5.0 BERYLLIUM

Beryllium smear samples may be taken by RMRS Industrial Hygiene. The following factors are used to determine when sampling for beryllium is required:

- presence of the building on the list of beryllium areas,
- history of the building/ area, and
- potential of employee exposure due to demolition/renovation methods.

Sampling methodology will be in accordance with the RFETS Chronic Beryllium Disease Prevention Program (CBDPP). In addition, biased samples may be collected based on building/area history. Samples will be collected in accordance with the RMRS Beryllium Swipe Sampling Procedure. Samples will be analyzed via ICP.

Surgeon's gloves are the required PPE. Personal breathing zone sampling has shown that respiratory protection for beryllium is not required during beryllium smear

sampling. However, if the area is extremely dusty, or if further air sampling shows higher beryllium levels, respirators will be required.

The Beryllium Operations Computer-Based Training (CBT) Course is required for the sampler. A new Beryllium Awareness Training Course is currently being developed, and will replace the Beryllium Operations CBT.

Personal breathing zone samples may be collected by the Characterization Health and Safety Supervisor.

Beryllium medical surveillance is not required unless personal breathing zone samples show airborne beryllium levels exceeding the action level of 0.5 $\mu g/m^3$.

6.0 TRAINING

The following is a list of training and medical approvals which may be required. The job-specific List of Qualified Individuals (LOQI) and training matrix included in the readiness assessment will specify required training for each project.

- Asbestos Awareness (RCTs and others who may contact but not disturb asbestos)
- Asbestos Briefing (all other sampling personnel)
- Asbestos Inspector/Refresher
- Beryllium Operations/ Beryllium Awareness
- Confined Space Entry Safety Awareness
- Fall Protection Awareness
- Ladder Safety Awareness
- Lead Awareness
- Lock Out/Tag Out Training
- Respirator Fit Test
- Respirator Medical Approval
- Training required by the building/area

7.0 PERSONAL PROTECTIVE EQUIPMENT

For all sampling, the following PPE is required:

- safety glasses with sideshields
- safety-toed work boots

- leather gloves if appropriate
- work clothing (DOE coveralls), and
- hard hat if any overhead or bump hazards exist.

Characterization personnel must wear any additional PPE required by the building/area.

The following PPE may be required based upon the materials being sampled or materials present in the area during sampling.

- full-face respirator equipped with HEPA or other cartridges
- SCBA
- Tyvek or other coveralls
- Protective gloves
- Protective booties
- hearing protection

The Characterization Health and Safety Supervisor and Radiological Engineer or RWP will specify PPE. The required PPE will be listed in the AHA.

8.0 EMERGENCIES

Preplanning will reduce potential injuries in the result of an emergency. Sampling personnel must receive a building/area indoctrination if applicable or be escorted by an indoctrinated individual. Sampling personnel will become familiar with the locations of emergency egress routes, assembly areas, eye wash/ safety shower stations, fire extinguisher locations, and nearby telephones.

The sampling team will always have at least one radio and will establish radio contact while out in the field.

If any employee is injured or becomes ill, and the situation is life threatening, call 2911. If the situation is not life threatening, transport the employee to Medical at Bldg. 122. If the situation occurs after hours, transport the employee to the Fire Department at Bldg. 331.

In the event unanticipated hazards or conditions are encountered, the project activities will pause to assess the potential hazard or condition. The potential hazard or condition will be evaluated to determine the severity or significance of the hazard or condition and whether the existing project controls are sufficient to address the hazard

or condition. Based on this initial evaluation, a determination will be made whether to proceed with the controls currently in place; segregate the condition or hazard from the project activity, if this can be done safely; or curtail operations to address the unexpected hazard or condition. Concurrence to proceed down the selected path must be obtained from the RMRS Director or their designee.

In all cases, notify the following individuals:

Characterization Manager
Marla Broussard X6007 page# 212-6261 home # (303)530-5562

Characterization Health and Safety Supervisor
Peggy Schreckengast X6790 page # 212-6358 home # (303)487-8927

Radiological Engineering Manager (if radiological contamination)
Jeff Smith X7582 page # 212-6470 home # (303)456-1960

9.0 ACTIVITY HAZARD ANALYSIS

An Activity Hazard Analysis (AHA) is required for all projects/sampling events. The AHA need not repeat the requirements detailed in this Health and Safety Program.

10.0 REVIEW AND UPDATE

This program will be amended as necessary. At a minimum, the program will be fully reviewed and updated on an annual basis. Safety inspections will be conducted to determine compliance with this program, the applicable AHA, and the applicable OSHA Health and Safety Standards.

11.0 REFERENCES

American Conference of Governmental Industrial Hygienists (ACGIH) 1998 TLVs and BEIs (or newer version).

Colorado Regulation 8 (CCR8).

EPA 40 CFR 763.86

Kaiser-Hill Draft Chronic Beryllium Disease Prevention Program (CBDPP), September, 1998.

NIOSH Manual of Analytical Methods, 4th Edition, August, 1994 (or newer version), method numbers 7300, 7400, and 7500.

OSHA Construction Standard for Asbestos, 29 CFR 1926.1101.

RFETS Health and Safety Practices Manual:
- 1-15320-HSP-2.08 Lockout/Tagout
- 1-E36-HSP-6.04 Confined Space Entry
- 1-I87-HSP-7.06 Hearing Conservation.

RMRS Operations Directive 001, Safety and Environmental Stewardship.

RMRS Operations Directive 006, Safety Requirements for Work Involving Penetration of Walls, Floors, Ceilings, and Concrete, Asphalt, or Masonry Pads.